

CLAIMS

What is claimed is:

1. A method for aligning a beam projector with a linear array of receptors with first and second alignment receptors aligned with the linear array of receptors, the method comprising:

projecting a beam from the projector;

sweeping the beam until the first and second alignment receptors sense the beam;

upon each of the first and second alignment receptors sensing the beam, transmitting a signal;

responsive to the transmitted signals, recording the position of the beam projector;

computing, from the recorded positions, an alignment position of the beam projector to align with the linear array of receptors; and

aligning the beam projector with the linear array of receptors according to the alignment position.

2. The method of claim 1 wherein sweeping the beam includes sweeping the beam horizontally and vertically.

3. The method of claim 1 wherein transmitting a signal includes transmitting an electrical signal.

4. The method of claim 1 wherein transmitting a signal includes transmitting an optical signal.

5. The method of claim 1 wherein recording the position of the beam projector include recording the horizontal position of the beam projector.

6. The method of claim 1 wherein recording the position of the beam projector include recording the vertical position of the beam projector.

7. The method of claim 1 wherein computing the alignment position of the beam projector includes computing the horizontal position of the beam projector.

8. The method of claim 7 wherein aligning the beam projector includes positioning the beam projector to the horizontal position of the alignment position.

9. The method of claim 1 wherein computing the alignment position of the beam projector includes computing the vertical position of the beam projector.

10. The method of claim 9 wherein aligning the beam projector includes positioning the beam projector to the vertical position of the alignment position.

11. The method of claim 1 wherein computing the alignment position of the beam projector includes computing the position tilt angle of the beam projector.

12. The method of claim 11 wherein aligning the beam projector includes positioning the beam projector to the tilt angle of the alignment position.

13. A display system comprising;
an optically addressed display having an array of pixel cells and a linear array of receptors with a pair of alignment receptors aligned with the linear array of receptors, at least one of the receptors in the array in communication with the array of pixel cells for activation of the pixel cells;
a beam projector disposed to project a beam towards the linear array of receptors;
a positioning system mechanically coupled to the beam projector to control the position of the beam projector and align the beam projector in response to feedback from the alignment receptors; and

a feedback link between each alignment receptor and the positioning system, the feedback link configured to provide feedback from the alignment receptors to the positioning system in response to each alignment receptor sensing a beam from the beam projector.

14. The display system of claim 13 wherein the alignment receptors are disposed one at each end of the linear array.

15. The display system of claim 13 wherein each alignment receptor includes a single optical sensor.

16. The display system of claim 13 wherein each alignment receptor includes a plurality of optical sensors.

17. The display system of claim 16 wherein the plurality of optical sensors are arranged into two intersecting lines.

18. The display system of claim 16 wherein the plurality of optical sensors are arranged into a grid.

19. The display system of claim 13 wherein the beam projector includes a beam emitter and a rotating mirror.

20. The display system of claim 13 wherein the positioning system includes a plurality of stepper motors.

21. The display system of claim 13 wherein the positioning system includes a vertical positioner.

22. The display system of claim 13 wherein the positioning system includes a horizontal positioner.

23. The display system of claim 22 wherein the beam projector includes a beam emitter and a rotating mirror and the horizontal positioner includes a timing controller for the rotating mirror.

24. The display system of claim 13 wherein the positioning system includes a tilt angle positioner.

25. The display system of claim 13 wherein the feedback link includes:
a signal transmitter in communication with each alignment receptor and configured to transmit a signal in response to each alignment receptor sensing a beam from the beam projector and
a signal receiver in communication with the positioning system and disposed to receive a signal from the signal transmitter.

26. The display system of claim 25 wherein the signal transmitter includes an electrical signal transmitter and the signal receiver includes an electrical signal receiver.

27. The display system of claim 25 wherein the signal transmitter includes an optical signal transmitter and the signal receiver includes an optical signal receiver.

28. A display system comprising;
an optically addressed display having an array of pixel cells and a linear array of receptors with a pair of alignment receptors aligned with the linear array of receptors, at least one of the receptors in the array in communication with the array of pixel cells for activation of the pixel cells;
a beam projector disposed to project a beam towards the linear array of receptors;
means for providing feedback from the alignment receptors to the positioning system in response to each alignment receptor sensing a beam from the beam projector; and

means for aligning the beam projector in response to feedback from the alignment receptors.

29. The display system of claim 28 wherein the alignment receptors are disposed one at each end of the linear array of receptors.

30. The display system of claim 28 wherein the beam projector includes a beam emitter and a rotating mirror.

31. The display system of claim 28 wherein the means for aligning includes means for vertically aligning the beam projector.

32. The display system of claim 28 wherein the means for aligning includes means for horizontally aligning the beam projector.

33. The display system of claim 32 wherein the beam projector includes a beam emitter and a rotating mirror and the means for horizontally aligning includes means for controller the timing of the rotating mirror.

34. The display system of claim 28 wherein the means for aligning includes means for aligning a tilt angle of the beam projector.

35. The display system of claim 28 wherein the means for providing feedback includes:

a signal transmitter in communication with each alignment receptor and configured to transmit a signal in response to each alignment receptor sensing a beam from the beam projector and

a signal receiver in communication with the positioning system and disposed to receive a signal from the signal transmitter.

36. The display system of claim 35 wherein the signal transmitter includes an electrical signal transmitter and the signal receiver includes an electrical signal receiver.

37. The display system of claim 35 wherein the signal transmitter includes an optical signal transmitter and the signal receiver includes an optical signal receiver.

38. A program storage system readable by a computer, tangibly embodying a program, applet, or instructions executable by the computer to perform method steps aligning a beam projector with a linear array of receptors with first and second alignment receptors aligned with the linear array of receptors, the method comprising:

instructing the projector to project a beam;

instructing a positioning system to sweep the beam until the first and second alignment receptors sense the beam;

receiving a signal indicative of each of the first and second alignment receptors sensing the beam;

responsive to the received signals, recording the position of the beam projector;

computing, from the recorded positions, an alignment position of the beam projector to align with the linear array of receptors; and

instructing the positioning system to align the beam projector according to the alignment position.

39. The program storage system of claim 38 wherein instructing a positioning system to sweep the beam includes instructing the positioning system to sweep the beam horizontally and vertically.

40. The program storage system of claim 38 wherein recording the position of the beam projector include recording the horizontal position of the beam projector.

41. The program storage system of claim 38 wherein recording the position of the beam projector include recording the vertical position of the beam projector.

42. The program storage system of claim 38 wherein computing the alignment position of the beam projector includes computing the horizontal position of the beam projector.

43. The program storage system of claim 38 wherein computing the alignment position of the beam projector includes computing the vertical position of the beam projector.

44. The program storage system of claim 38 wherein computing the alignment position of the beam projector includes computing the position tilt angle of the beam projector.

45. A projection device for use with a display device having a signal transmitter and an optically addressed display having a linear array of receptors with a pair of alignment receptors aligned with the linear array of receptors, the projection device comprising:

a beam projector disposed to project a beam towards the linear array of receptors and configured to sweep the beam,

a signal receiver disposed to receive a signal from the signal transmitter, and

a positioning system in communication with the signal receiver and mechanically coupled to the beam projector to control the position of the beam projector and align the beam projector in response to the signal receiver receiving signals from the signal transmitter.

46. The projection device of claim 45 wherein the beam projector includes a beam emitter and a rotating mirror.

47. The projection device of claim 45 wherein the positioning system includes a plurality of stepper motors.

48. The projection device of claim 45 wherein the positioning system includes a vertical positioner.

49. The projection device of claim 45 wherein the positioning system includes a horizontal positioner.

50. The projection device of claim 49 wherein the beam projector includes a beam emitter and a rotating mirror and the horizontal positioner includes a timing controller for the rotating mirror.

51. The projection device of claim 45 wherein the positioning system includes a tilt angle positioner.

52. A projection device for use with a display device having a signal transmitter and an optically addressed display having a linear array of receptors with a pair of alignment receptors aligned with the linear array of receptors, the projection device comprising:

a beam projector disposed to project a beam towards the linear array of receptors;

a signal receiver disposed to receive a signal from the signal transmitter; and

means for aligning the beam projector in response to the signal receiver receiving signals from the signal transmitter.

53. The projection device of claim 52 wherein the beam projector includes a beam emitter and a rotating mirror.

54. The projection device of claim 52 wherein the means for aligning includes means for vertically aligning the beam projector.

55. The projection device of claim 52 wherein the means for aligning includes means for horizontally aligning the beam projector.

56. The projection device of claim 55 wherein the beam projector includes a beam emitter and a rotating mirror and the means for horizontally aligning includes means for controller the timing of the rotating mirror.

57. The projection device of claim 52 wherein the means for aligning includes means for aligning a tilt angle of the beam projector.

58. The projection device of claim 52 wherein the signal receiver includes an electrical signal receiver.

59. The projection device of claim 52 wherein the signal receiver includes an optical signal receiver.

60. A display device for use with a projection device disposed to project a beam towards the display device, the display device comprising:

an optically addressed display having an array of pixel cells and a linear array of receptors with a pair of alignment receptors aligned with the linear array of receptors, at least one of the receptors in the array in communication with the array of pixel cells for activation of the pixel cells and

a signal transmitter in communication with each alignment receptor and configured to transmit a signal in response to each alignment receptor sensing a beam from the beam projector.

61. The display device of claim 60 wherein the alignment receptors are disposed one at each end of the linear array.

62. The display device of claim 60 wherein each alignment receptor includes a single optical sensor.

63. The display device of claim 60 wherein each alignment receptor includes a plurality of optical sensors.

64. The display device of claim 63 wherein the plurality of optical sensors are arranged into two intersecting lines.

65. The display device of claim 63 wherein the plurality of optical sensors are arranged into a grid.

66. The display device of claim 60 wherein the signal transmitter includes an electrical signal transmitter.

67. The display device of claim 60 wherein the signal transmitter includes an optical signal transmitter.

68. The display device of claim 60 wherein the signal receiver includes an electrical signal receiver.

69. The display device of claim 60 wherein the signal receiver includes an optical signal receiver.

70. A display device for use with a projection device having a beam projector and a positioning system, the beam projector disposed to project a beam towards the display device, the display device comprising:

an optically addressed display having an array of pixel cells and a linear array of receptors with a pair of alignment receptors aligned with the linear array of receptors, at least one of the receptors in the array in communication with the array of pixel cells for activation of the pixel cells;

means for providing feedback from the alignment receptors to the positioning system in response to each alignment receptor sensing a beam from the projection device.

71. The display device of claim 70 wherein the alignment receptors are disposed one at each end of the linear array of receptors.

72. The display device of claim 70 wherein the means for providing feedback includes a signal transmitter in communication with each alignment receptor and configured to transmit a signal in response to each alignment receptor sensing a beam from the beam projector.

73. The display device of claim 72 wherein the signal transmitter includes an electrical signal transmitter and the signal receiver includes an electrical signal receiver.

74. The display device of claim 72 wherein the signal transmitter includes an optical signal transmitter and the signal receiver includes an optical signal receiver.